Project Introduction

Through extensive research conducted by Mosaic ATM in the area of Dynamic Airspace Configuration (DAC), we have identified the significant benefit of the use of Dynamic Density (DD) as the DAC objective function. The use of DD as the objective function allows the DAC algorithm to directly address critical aspects of sector design beyond simple balancing of the flight counts. These sector design considerations include the alignment of sector boundaries with flow direction, proximity of conflict points to sector boundaries, and boundary alignment with respect to vertical traffic movement. By using DD as the objective function, we generate a multi-objective optimization approach that considers both efficiency and complex controller workload issues. The SectorFlow DAC algorithm has performed well in NASA's DAC algorithm comparison experiments. However, due to the additional computational complexity caused by the use of DD as the objective function, only limited application of DD as the objective function was conducted. In this proposed SBIR effort, Mosaic ATM will apply a massively parallel computing architecture to the DAC algorithm using DD as an objective function to demonstrate and evaluate both the computational advantages of massively parallel processing, and the benefits of using DD as the objective function in DAC.

Primary U.S. Work Locations and Key Partners

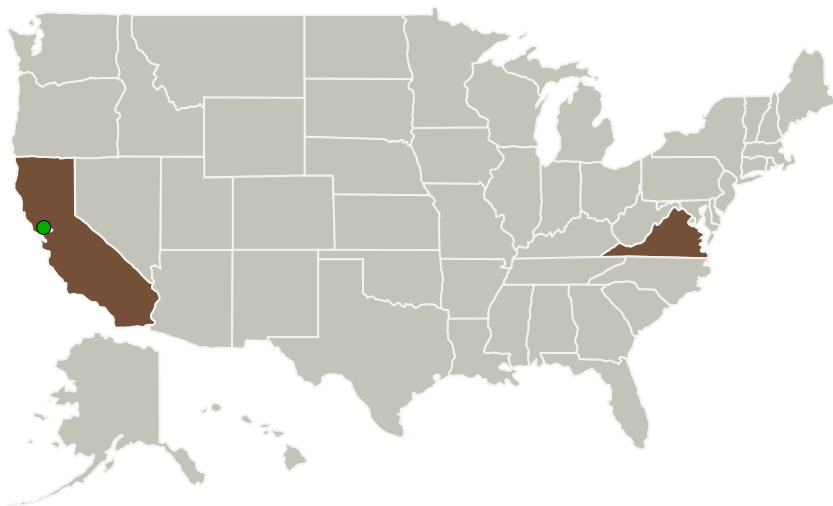Massively Parallel Processing for Dynamic Airspace Configuration, Phase I

Table of Contents

Organizations Performing Work	Role	Type	Location
Mosaic ATM, Inc.	Lead Organization	Industry	Leesburg, Virginia
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Virginia

Project Transitions

▶ **February 2011:** Project Start

✔ **September 2011:** Closed out

Closeout Documentation:
- Final Summary Chart*(https://techport.nasa.gov/file/138289)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Mosaic ATM, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Bart Gallet

Co-Investigator:

Bart Gallet

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**

1	2	3	4	5	6	7	8	9

Applied Research	Development	Demo & Test

Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
  └ TX16.3 Traffic Management Concepts

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System